

CLAIMS

1. A detection system for use in an optical disk-based analytical devise for measuring the presence of an analyte in a sample, said detection system

5 comprising:

an analyte detector unit comprising a primary detector which selectively reacts with analyte present in a sample to produce an amplification agent;

10 an amplification unit comprising a plurality of secondary detection agents wherein each of said detection agents is changeable between a negative detection state and a positive detection state; and

15 a fluid connection between said analyte detector unit and said amplification unit to provide reactive contact between said amplification agent and said plurality of detection agents wherein said amplification agent is capable of changing a plurality of said detection agents between said negative and said positive detection states to thereby amplify the measurable presence of said analyte.

2. An optical disk-based detection system according to claim 1 wherein said system is located on a compact disk or digital video disk.

20 3. An optical disk-based detection system according to claim 1 wherein said primary detector and/or said secondary detection agents are bound to said optical disk.

25 4. An optical disk-based detection system according to claim 1 wherein said amplification agent comprises an enzyme which is released from said primary detector when said primary detector selectively reacts with said analyte, said enzyme being capable of changing a plurality of said detection agents from said negative detection state to said positive detection state or from said positive detection state to said negative detection state.

5. An optical disk-based detection system according to claim 1 wherein said fluid connection is a microfluidic connection.

6. A detection system for use in an optical disk-based analytical device for measuring the presence of an analyte in a sample, said detection
5 system comprising:

an analyte detector unit comprising a primary detector which selectively reacts with analyte present in a sample to produce a primary amplification agent;

10 a multiplier unit which comprises a plurality of intermediary multiplier agents;

a fluid connection between said analyte detector unit and said multiplier unit to provide reactive contact between said primary amplification agent and said plurality of intermediary multiplier agents wherein said primary amplification agent is capable of reacting with a plurality of said intermediary
15 multiplier agents to provide a plurality of secondary amplification agents;

an amplification unit comprising a plurality of detection agents wherein each of said detection agents is changeable between a negative detection state and a positive detection state; and

20 a fluid connection between said multiplier unit and said amplification unit to provide reactive contact between said plurality of secondary amplification agents and said plurality of detection agents wherein each of said secondary amplification agents is capable of changing a plurality of said detection agents between said positive and said negative detection states to thereby amplify the measurable presence of said analyte.

25 7. An optical disk-based detection system according to claim 6 wherein said system includes more than one amplification unit.

8. An optical disk-based detection system according to claim 6 wherein said system is located on a compact disk or a digital video disk.

9. An optical disk-based detection system according to claim 2 wherein said primary detector and/or said intermediary multiplier agents are bound to said optical disk.

10. An optical disk-based detection system according to claim 9
5 wherein said detection agents are bound to said optical disk.

11. An optical disk-based detection system according to claim 6 wherein said amplification agent comprises a first enzyme which is released from said detector when said detector selectively reacts with said analyte, said enzyme being capable of reacting with a plurality of said intermediary multiplier
10 agents to release said secondary amplification agents and wherein said secondary amplification agents comprise a second enzyme which is capable of changing a plurality of said detection agents from said negative detection state to said positive detection state or from said positive detection state to said negative detection state.

12. An optical disk-based detection system according to claim 6
15 wherein said fluid connections are microfluidic connections.